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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,834	03/24/2004	Jerome J. Kukor	744-20 CON/RCE/CON	4324
23869	7590	08/10/2004	EXAMINER	
HOFFMANN & BARON, LLP 6900 JERICHO TURNPIKE SYOSSET, NY 11791			MITCHELL, KATHERINE W	
			ART UNIT	PAPER NUMBER

3677

DATE MAILED: 08/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

 Office Action Summary	Application No. 10/807,834	Applicant(s) KUKOR ET AL.	
	Examiner Katherine W Mitchell	Art Unit 3677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on not applicable is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they will not be printed on the face of the patent. At least paragraphs 8, 9, 15-18, 38-39, 47-50, 87, 88, 90, and 91 refer to references not listed on the IDS. Examiner notes that an IDS is not required unless applicant wants the references considered and cited.

The information disclosure statement (IDS) and references submitted Aug 15, 2003 with parent application 10/459899, US Patent 6746180 B2, have been obtained and considered by examiner, and the references have been listed by examiner on the form PTO-892 provided with this action.

Specification

2. The abstract of the disclosure is objected to because it is slightly over 150 words long and uses the implied phrase "is provided" in line 2. Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention,"

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"The disclosure describes," etc. The implied phrase "is provided" in line 2 should be omitted. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

3. The disclosure is objected to because of the following informalities:

➤ Paragraph [0002] refers to Application No. 10/459899. However, this has since issued as US Patent 6746180 B2 and should be amended to reflect the issued patent.

➤ Several typing/grammatical errors are noted in paragraph [0043]:

"These **modifications** preventsu the precipitation of the transition metal as an insoluble salt and further rendersu the entire process more biocompatible." should be -- These modifications prevent the precipitation of the transition metal as an insoluble salt and further render the entire process more biocompatible.--

Claim Objections

4. Claims 2-3 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

The motivation to provide a specific step or condition is not considered a patentable limitation. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-53 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites a treatment

method of a contaminate contaminated with an organic compound, and includes

sequential steps of:

- Providing a contaminate contaminated with an organic compound,
- Bioremediating treatment steps, suitable to mediate solubilization or biodegradation of the organic compound or reactive products thereof, and
- Chemical oxidation treatment steps, wherein there is a chemical reaction with the organic compound to produce reaction products of the organic compound.

Thus there are two discrete reaction products, those of step "b" and those of step "c". However, step "b", which necessarily occurs before step "c", includes references to "reaction products" of the organic compound. It is not clear if the reaction products in step "b" are the same reaction products formed in step "c", or if these are reaction products formed in the biodegradation step, or otherwise formed reaction products, and it is not clear if or how the reaction products in steps "b" and "c" are related. Examiner notes that claim 41 specifically refers to the products of the microbial consortium treatment (of step b) as being

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"biodegradation reaction products". Claim 2-53 are rejected as depending from claim 1.

Further, claims 29, 30, 39, 40, 43, and 44 refer to "reaction products" and it is not clear whether the "reaction products" are those formed during step "b" or step "c".

In order to examine the claims, examiner is considering "reaction products" to refer to products of the chemical oxidation in step "c", as applicant refers to "biodegradation products" or "products of biodegradation" in claims 41, 42, 45 and 46, even though they are noted as "biodegradation reaction product" in claim 41.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1-53 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2 and 4-

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53 of U.S. Patent No. 6746180. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Regarding claim 1: the newly-submitted independent claim 1 is identical to claim 1 of US 6746180 except the newly-submitted independent claim 1:

- requires that the chemical oxidation step is subsequent to the bioremediation step. Claim 2 of US 6746180 discloses that the order of bioremediation and chemical oxidation steps can include bioremediation followed by chemical oxidation.
- requires at least one of a group of species, while US 6746180 claims at least two of the same group of species. "At least two" includes "at least one".
- Includes that the bioremediation comprises a microbial consortium, while US 6746180 claims the narrower "living, exogenous microbial consortium". The narrower US 6746180's "living, exogenous microbial consortium" would encompass the pending claim limitation.

Regarding Claims 2-3 of the pending application: They recite the same limitation (neutral pH) as claim 1, adding only a specific motivation for the neutral pH, and thus provide no further patentable limitations.

The correlation of the claims is summarized below:

Claim # pending in 10/807834	Claim # in US 6746180
1	1-2
2	1-2
3	1-2

4--42	4--42 respectively -- identical except independent claim 1
43	45 -- identical except independent claim 1
44	46 -- identical except independent claim 1
45	43 -- identical except independent claim 1
46	44 -- identical except independent claim 1
47--50, 52	47-50, 52 respectively -- identical except independent claim 1
51	51 -- identical except for limitations of independent claim 1 and that pending claim 51 claims at least one of a group of species, while US 6746180 claims at least two of the same group of species. "At least two" includes "at least one".
53	53 -- identical except for limitations of independent claim 1

	and that pending claim 53 claims "at least one" of a group of species, while US 6746180 claims at least two of the same group of species. "At least two" includes "at least one".
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Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodell et al. US Patent 6046375 in view of Pignatello, US Patent 6160194.

Re claims 1-3, 9-11, and 51-52: Goodell et al. teach in the abstract and col 2 line 48-51, col 3 lines 8-52, and col 8 lines 40-55 a method of chemical oxidization comprising solubilizing a transition metal ion, such as iron Fe(III) or manganese, and a chelator of the transition metal to form a transition metal:chelator complex, and an oxidizing agent that provides a reactive free radical in the presence of the complex. Examiner notes that applicant did not claim an isolated chelator of a transition metal. Using the method to treat a contaminate contaminated with an organic compound is taught in col 1 lines 9-

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15, and col 4 lines 29-33, and using a reactive free radical to initiate the chemical reaction with the organic contaminate is taught in col 3 line 65-col 4 line 2. Col 7 lines 43-45 teach that "all components of the reaction are mixed in an oxygenated environment in buffered solutions representing the pH spectrum."

Fungi are known reactants in the generation of free radicals for biodegradation of organic compounds as taught in col 2 lines 7-36. Col 9 lines 7-31 and the

Examples I-XI teach using biological agents to contact the contaminate under conditions suitable for the microbial consortium to mediate solubilization or biodegradation of the organic compound or its reaction products at any step in the process, and thus bioremediation followed by chemical oxidation is included. A biodegrading microbial consortium would inevitably degrade the organic compound of the contaminate.

However, Goodell et al. do not specify the neutral pH range. Pignatello teaches a method of treatment of a contaminate contaminated with an organic compound, and further teaches in col 4 lines 60-67 that the ferric chelate and peroxide degradation of organics in soil proceeds at a typical pH of 6, although it can range from 3.5 to 8, which includes neutral pH. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Goodell et al. to include a neutral pH range, as taught by Pignatello, in order to eliminate the requirement for slurry acidification and its inherent costs and associated hazards and drawbacks, as discussed by Pignatello in col 4 lines 62-65. Further, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have

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selected a narrowed pH range to match the desired pH of the process and environment, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Further regarding claims 2 and 3: The specific motivation for a step or parameter is not considered patentably distinct from the same method step with a different motivation. The fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Goodell et al. are aware of the effects of pH. Pignatello's teaching of reactions at a neutral pH and the disadvantages of acidic pH (col 2 lines 35-38 and 43-46) would be of interest with regard to Goodell et al.

Re claims 4 and 47-48: The contaminate as a slurry, industrial waste fluid, water, or soil is taught in Goodell et al. col 1 lines 9-15, col 3 lines 65-67, and col 4 lines 29-33. Industrial applications unavoidably use some naturally formed organics. However, the method of forming or source of the organic compound is not germane to the issue of patentability of the method of treatment of a contaminate contaminated with an organic compound, as the method of treating an organic compound is not affected by the source of the compound. That is, naphthalene (or anthracene, etc) contamination is naphthalene (or anthracene, etc) contamination, and the treatment is the same regardless of the source of the naphthalene (or anthracene, etc). Examiner notes that applicant

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has provided no criticality for the different sources, and has listed multiple sources as variants. It has been held that to be entitled to weight in method claims, the recited structure limitations therein must affect the method in a manipulative sense, and not to amount to the mere claiming of a use of a particular structure. *Ex parte Pfeiffer*, 1962 C.D. 408 (1961).

Re claim 5: Remediation methods used for soil and industrial applications would obviously be used for particulates such as mining waste, rocks, ore, and coal, as the deciding factor is the contaminant that needs to be treated, and the scale is similar in both. Therefore, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have included similar contaminates of similar scale, such as mining and coal sites, in order to have standardized methods of treatment for similar conditions to maximize the market and applicability.

Re claims 6-8 and 49: Goodell et al. Col 19 lines 41-46 teach that a chlorinated {halogenated} aromatic compound such as {organic} pentachlorophenol can be treated. Polycyclic compounds would obviously be included as contaminants if aromatic compounds were successfully oxidized, and are included by Goodell et al. in col 3 lines 16-19. However, the specific compounds are not discussed. Pignatello in col 1 lines 28-36 teaches that naphthalene and fluorene are among the polycyclic compounds that can be treated. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Goodell et al. to include naphthalene and fluorene among the aromatic compounds that can be treated,

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as taught by Pignatello, in order to maximize the applications of the process to increase marketability.

Re claims 12-14: The iron is present as a perchlorate in Goodell et al. col 12 lines 31-36.

Re claims 15-19: The chelator as an iron-chelator compound, comprising a hydroxylated benzene, further comprising dihydroxybenzene, further comprising catechol, is taught in Goodell et al. col 2 lines 66-67.

Re claims 20-21: A hydroxylated benzoic acid is taught in col 20 lines 14-17. However, gallic acid and salicylic acid are not specifically taught. Pignatello teaches that gallic acid is an active, soluble ferric chelate in col 3 lines 51-56 and col 13 lines 16-21. Absent any criticality or unintended results, other specific hydroxylated benzoic acids such as salicylic acid would be the result of routine experimentation and knowledge in the art. Therefore, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Goodell et al. to use gallic or salicylic acid as the hydroxylated benzoic acid, as taught by Pignatello and common knowledge of one in the art, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Re claims 22-24: Buffering salts to maintain a pH range of 5-8, preferably 5.5 to 7, most preferably 6-6.5 are taught in col 7 lines 43-45, which teaches buffered solutions representing the pH spectrum. Absent any criticality or unintended results, the specific pH would be the result of routine experimentation

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and knowledge in the art. Therefore, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have selected a buffering salts in a narrowed pH range to match the desired pH of the process and environment, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Re claims 25-27, 31: Hydrogen peroxide as the oxidant is taught in col 3 lines 10-14. The reactive free radical comprising an oxygen radical is unavoidable if H_2O_2 is used, and oxidants forming free radicals is taught in Goodell et al. col 5 lines 22-23. H_2O_2 produces oxygen radicals.

Re claims 28-29 and 37-46: Pentachlorophenol is essentially insoluble in water. Carbon tetrachloride, taught in col 3 lines 16-23, is insoluble in water. Both are toxic and suspected carcinogens to humans and animals. Reaction products H_2O and CO_2 are soluble in water. Both produce reaction products including H_2O and CO_2 , which are not toxic or carcinogenic to humans or animals. Biodegradation will unavoidably yield H_2O and CO_2 also, which are non-toxic and not known to be carcinogenic to humans and animals.

Re claim 30: Chemical oxidation of hydrocarbons unavoidably yields products bioavailable to a microbial consortium, as hydrocarbon oxidation will yield H_2O and CO_2

Re claim 32: Buffering salts used for neutralization by definition have a pKa in the neutral range.

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neu·tral·ize (nī'tre-līz', nyī'-) *verb, transitive***neu·tral·ized, neu·tral·iz·ing, neu·tral·iz·es**

4. Chemistry. **a.** To make (a solution) neutral. **b.** To cause (an acid or a base) to undergo neutralization. ¹

Re claim 33-34: Examiner takes Official Notice that calcium carbonate, with a pKa from 5-8, is routinely sold and used as a buffering salt. Absent any criticality or unintended results, its use as such would be the result of routine experimentation and knowledge in the art. Therefore, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have used calcium carbonate, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Re claims 35-36: Goodell et al. teach all the elements except specifying that the treatment method results in reaction products including H₂O and CO₂, which inevitably have a lower molecular weight than the organic contaminant such as carbon tetrachloride or Pentachlorophenol. H₂O and CO₂ production, the unavoidable byproducts of carbon tetrachloride or Pentachlorophenol oxidation, imply that the organic compound was substantially mineralized. Pignatello in col 11 lines 18-27 and col 14 line 64-col 15 line 16 teaches mineralization to lower the molecular weight of the organic contaminate. Therefore, it would have been obvious to one of ordinary skill in the art at the

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time the invention was made to have modified Goodell et al. to include mineralization to H₂O and CO₂ to reduce the molecular weight of the organic compound, as taught by Pignatello, in order to use standard chemical reactions and methods to avoid unexpected or undesired byproducts.

Re claim 50: Goodell teaches that the contaminated substrate can be trichloroethylene { trichloroethene compound} in col 3 lines 15-22.

11. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodell et al. in view of Pignatello, as applied to claim 1 above, and further in view of Hunter et al. US patent 6251657. As discussed above, Goodell et al. in view of Pignatello teach all the elements except at least one of a group of specific microbiological agents for contaminate pretreatment or post treatment. Hunter et al. teach that it is known in the art that pseudomonas can be used for biodegradation of cyclic halogenated organics in col 3 lines 57-61 and lines 33-35. Therefore, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Goodell et al. in view of Pignatello as applied to claim 1, to have used at least one of a group of specific microbiological agents, such as pseudomonas as taught by Hunter et al., since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

12. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodell et al. in view of Pignatello, as applied to claim 1 above, and further in view of Eccles US Patent 5840191. As discussed above, Goodell et al. in view of

Pignatello teach all the elements except at least one of a group of specific microbiological agents for contaminate pretreatment or post treatment. Eccles teaches that pseudomonas and alcaligenes are well suited for biodegradation of cyclic and aromatic compounds, including halogenated compounds, in col 5 lines 55-65. Therefore, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Goodell et al. in view of Pignatello as applied to claim 1, to have used at least one of a group of specific microbiological agents, such as pseudomonas or alcaligenes as taught by Eccles, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Conclusion

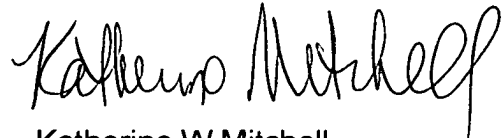
13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine W Mitchell whose telephone number is 703-305-6713. The examiner can normally be reached on Mon - Thurs 10 AM - 8 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J. J. Swann can be reached on 703-306-4115. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Katherine W Mitchell
Patent Examiner
Art Unit 3677

Kwm
7/29/04